



Xanadu Charts Path to Over 1,000 Logical Qubits by 2031

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Details milestone-driven technical roadmap to a quantum data center and PennyLane software strategy

TORONTO, Aug. 31, 2026 (GLOBE NEWSWIRE) -- Xanadu Quantum Technologies Limited ("Xanadu" or the "Company") (NASDAQ: XNDU) (TSX: XNDU), a leading photonic quantum computing company, will host its Technology Roadmap Presentation today at 1:00 p.m. ET, featuring presentations from members of its executive and technical leadership team on the Company's technology roadmap and path to commercial utility-scale quantum computing.

A live webcast and accompanying presentation materials will be available through the Company's investor relations website at investors.xanadu.ai, with a replay available following the event.

In connection with the event, Xanadu is providing an expanded, milestone driven technology roadmap reflecting progress across its photonic quantum computing architecture and PennyLane software platform.

Hardware: Advancing Toward Fault-Tolerant Quantum Computing

Xanadu's hardware roadmap is focused on reducing loss, the primary source of error in its photonic architecture, to a level where quantum error correction can increasingly correct logical errors. The Company is working toward this through improvements in materials, fabrication, packaging and system architecture, alongside continued advances in quantum error correction and architectural design.

Reducing loss: Xanadu is targeting continued improvements in photon loss, a key measure of errors, through advances in component performance, manufacturing processes and system design. The roadmap targets a reduction in the Company's key loss technical indicator from 24.1x by 2026 to 1.0x by 2030. These improvements, if achieved, are expected to progressively improve logical qubit quality and enable quantum error correction to more effectively correct errors as the system scales.

Advancing error correction: Xanadu's fault-tolerant architecture is built around a concatenated error-correction approach that combines GKP encoding with quantum low-density parity-check (qLDPC) codes. As physical photon loss improves and falls below the required error-correction threshold, the architecture is designed to increasingly correct logical errors, with logical error rates targeted to improve to 10^{-16} by 2030. This improvement in logical qubit quality is expected to provide the foundation for scaling the number of usable logical qubits, with Xanadu targeting up to 200 logical qubits by 2029, up to 500 by 2030, and 1,000+ by 2031.

Scaling toward fault tolerance: Xanadu's updated roadmap includes the following projected technical milestones and projects:

- Qubit Factory build: 2026–2027
- Fault tolerance milestone: 2028-2029
- Up to 200 logical qubits by 2029, scaling to up to 500 by 2030 and 1,000+ by 2031
- Logical error rate to improve from roughly 10^{-3} - 10^{-8} in 2028 to 10^{-16} by 2030
- Quantum data center: 2029–2030

Xanadu's photonic architecture is designed to operate at room temperature, be manufactured using silicon processes and scale through modular, networked systems compatible with existing telecom infrastructure. The Company is also building out its 158,000-square-foot Toronto manufacturing facility, Inception, to support testing, heterogeneous integration, photonic integrated circuit packaging and rack-level module assembly.

"We've cut our loss ratio dramatically, and that progress is what gives us confidence in reaching fault tolerance in 2028-2029," said Christian Weedbrook, Founder and CEO of Xanadu. "What's left is largely a materials, fabrication and systems engineering challenge, along with further architecture optimizations, areas we believe our approach is built to handle as we scale from fault tolerance to a networked quantum data center by the end of the decade."

Software: PennyLane Extends Its Position as a Leading Quantum Development Platform

Alongside its hardware roadmap, Xanadu continues to expand PennyLane, its open-source platform for building quantum applications in Python and running them across simulators and quantum processors from multiple hardware vendors.

Every major shift in computing has been shaped not only by advances in hardware, but by the software platforms that enable developers to build on them. Xanadu is building PennyLane with the goal of becoming that foundational software layer for quantum computing.

We believe quantum application development still runs into real constraints: quantum programming expertise remains scarce, early tooling often locks developers into a single hardware vendor's stack, and many programming languages cap what the underlying machine can do rather than exposing its full power. Documentation is another barrier: a 2025 industry survey found poor documentation was developers' leading reason for abandoning a tool, ahead of price.

PennyLane is built to remove those constraints. It's easy to use, the Catalyst compiler translates hybrid quantum-classical programs down to the target device, and the Lightning simulator suite runs the workload on a CPU, a GPU, an HPC cluster, or a quantum processor, including Xanadu's own hardware. The result is a single framework developers can build in once and deploy across the industry's major hardware modalities, including superconducting, trapped ion, neutral atom and photonic systems, and adoption has followed:

- PennyLane was used by 30.8% of developers surveyed over the past year, the second-highest usage share among quantum development platforms
- More than 1,890 public code repositories declare PennyLane as a dependency
- The platform family sees approximately 1.1 million package installs per month
- 51 simulator and hardware devices are reachable from a single PennyLane API
- More than 150 university partners across more than 35 countries use PennyLane in research and teaching

We believe PennyLane's ease of use and first-class developer experience are making it a platform of choice for researchers, developers, and enterprises building quantum capabilities. Organizations are using it to train teams, build quantum expertise, and explore real-world applications, including the Quantum Talent Pipeline partnership with Lockheed Martin, as well as applied research collaborations with organizations including Rolls-Royce, Toyota, Volkswagen, AMD and Mitsubishi Chemical Group.

"Every developer, researcher, and enterprise building with PennyLane today is a potential customer when our hardware comes online. That's the real value of PennyLane," said Rafal Janik, Chief Operating Officer of Xanadu. "It gives us a foothold in the quantum ecosystem today, allowing us to build relationships that have the potential to evolve into applied quantum solutions and, ultimately, Xanadu hardware and cloud services."

Commercial model: Xanadu sees multiple potential paths to monetizing its software ecosystem over time, including enterprise training and enablement, applied algorithm development, future cloud-delivered services and hardware sales to customers already using its software tools. These paths feed into a broader commercialization strategy as the Company targets meaningful end-customer commercialization by 2029–2030, underpinned by a full-stack platform spanning proprietary hardware and software and strategic partnerships.

Financial Position and Government Funding

Capitalization: We believe Xanadu is well-capitalized to execute on this roadmap, with approximately US\$686 million of total available funding: US\$312.8 million of cash and cash equivalents and US\$232.8 million of remaining capacity under the synthetic at-the-market equity facility (SATM) with Yorkville Advisors, each as of June 30, 2026, plus approximately US\$140.2million (CAD \$195 million) of confirmed Government of Canada funding under Project OPTIMISM.

About Xanadu

Founded in 2016, Xanadu is a Canadian photonic quantum computing company with the mission to build quantum computers that are useful and available to people everywhere. Xanadu is building fault-tolerant quantum computers using light, with systems designed to compute at room temperature. Xanadu develops both hardware and software, including PennyLane, its open-source quantum computing platform. Xanadu is the first pure-play photonic quantum computing company to list on public markets (Nasdaq/TSX: XNDU) and is recognized globally for its breakthroughs in scalable quantum technologies. Visit xanadu.ai or follow on X @XanaduAI.

Forward-Looking Statements

This press release contains "forward-looking statements" within the meaning of the U.S. federal securities laws and "forward-looking information" within the meaning of applicable Canadian securities laws (collectively, "forward-looking statements"). Forward-looking statements may be identified by the use of words such as "estimate," "plan," "project," "forecast," "intend," "will," "expect," "anticipate," "believe," "seek," "target," "continue," "could," "may," "might," "possible," "potential," "predict" or similar expressions that predict or indicate future events or trends or that are not statements of historical matters. We have based these forward-looking statements on current expectations and projections about future events.

These statements include: Xanadu's mission and technology roadmap, including its path toward fault-tolerant, utility-scale quantum computing and its ability to build quantum computers that are useful and available to people everywhere; projections of market opportunity, market share and the anticipated size and timing of the addressable market for fault-tolerant quantum computing; anticipated milestones and timelines, including the construction of a Qubit Factory, the achievement of fault tolerance, the development of a quantum data center, and the build-out of the Company's Toronto manufacturing facility, Inception; projections

regarding key technology indicators, including photon loss reduction targets, logical qubit counts, and logical error rate targets; expectations regarding our business strategy, market position, value creation strategy and our ability to create value through hardware, software and intellectual property; expectations around quantum computing's emergence as a meaningful segment of global compute; expectations regarding the Company's software platform, PennyLane, including its adoption, market position, planned monetization through workforce training, applied algorithm engagements, future product distribution and hardware pull-through, and the expansion of the PennyLane ecosystem; projections regarding the Company's ability to commercialize new products and technologies, including the target of meaningful end-customer commercialization by 2029 and beyond; expectations regarding Xanadu's ability to execute its business model and the expected financial benefits of such model, including with respect to capital sufficiency; expectations regarding strategic collaborations and partnerships, including with Lockheed Martin, Rolls-Royce, Toyota, Volkswagen, AMD, and Mitsubishi Chemical Group; expectations regarding the potential commercialization of Xanadu's photonic intellectual property for applications outside of quantum computing; the sufficiency of Xanadu's current cash position, synthetic at-the-market facility, and anticipated government funding to fund its mission and technology roadmap; and future partnerships, ventures or investments in companies, products, services, or technologies.

These forward-looking statements are provided for illustrative purposes only and are not intended to serve as, and must not be relied on as, a guarantee, an assurance, a prediction, or a definitive statement of fact or probability. Actual events and circumstances are difficult or impossible to predict and will differ from assumptions, many of which are beyond the control of Xanadu. These forward-looking statements are subject to known and unknown risks, uncertainties and assumptions that may cause the Company's actual results, levels of activity, performance or achievements to be materially different from any future results, levels of activity, performance or achievements expressed or implied by such statements. Such risks and uncertainties include: that Xanadu is pursuing an emerging technology, faces significant technical challenges, and may not achieve commercialization or market acceptance; the risk that Xanadu may not reduce photon loss to the levels necessary to cross the error-correction threshold on the timeline anticipated or at all, and that failure to do so would prevent the achievement of fault tolerance; risks related to the construction, completion, and commissioning of Xanadu's planned manufacturing and quantum data center facilities on the anticipated timeline or budget; Xanadu's historical net losses and limited operating history; Xanadu's expectations regarding future financial performance and capital requirements, including its ability to fund operations from existing cash resources, the synthetic at-the-market facility, and anticipated government funding; Xanadu's competitive landscape, including competition from companies pursuing alternative quantum computing modalities and from companies with significantly greater resources; Xanadu's dependence on members of its senior management and its ability to attract and retain qualified personnel; the potential need for additional future financing; Xanadu's reliance on strategic partners and other third parties; Xanadu's concentration of revenue in contracts with government or state-funded entities; Xanadu's ability to maintain, protect, and defend its intellectual property rights; risks that Xanadu may not successfully monetize its photonic intellectual property for non-quantum applications; risks related to the SATM Facility, including the potential for substantial dilution to existing shareholders; risks related to PennyLane adoption and monetization, including that competing open-source platforms could erode Xanadu's market position; and other factors described in the Company's filings with the U.S. Securities and Exchange Commission (the "SEC") and the Canadian securities regulatory authorities, which are incorporated by reference herein. These forward-looking statements are based on certain assumptions, including that none of the risks identified above materialize; that there are no unforeseen changes to economic and market conditions, and that no significant events occur outside the ordinary course of business. Additional information concerning these and other factors that may impact such forward-looking statements can be found in filings by the Company with the SEC and the Canadian securities regulatory authorities, including under the heading "Risk Factors." If any of these risks materialize or assumptions prove incorrect, actual results could differ materially from the results implied by these forward-looking statements.

These forward-looking statements reflect the expectations, plans, and forecasts of Xanadu's management as of the date of this press release; subsequent events and developments may cause their assessments to change. While Xanadu may elect to update these forward-looking statements at some point in the future, it specifically disclaims any obligation to do so, unless required by applicable securities laws. Accordingly, undue reliance should not be placed upon these statements.

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